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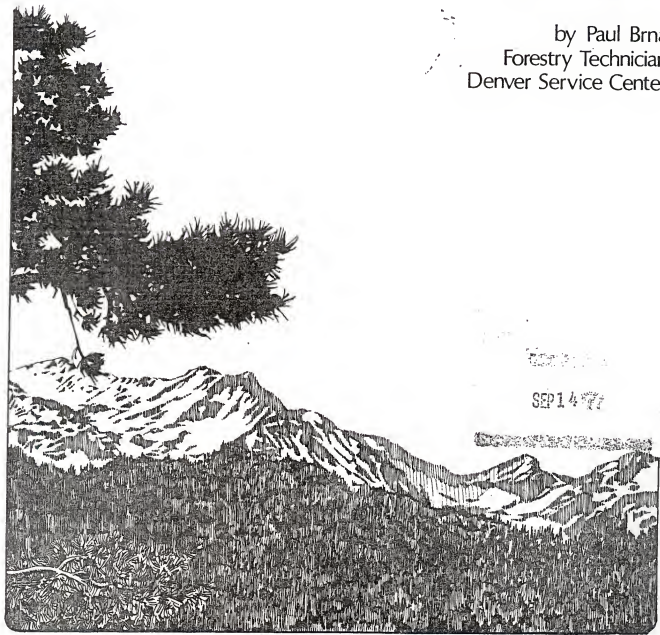
# TECHNICAL NOTE

U.S. DEPARTMENT OF THE INTERIOR – BUREAU OF LAND MANAGEMENT

## Forest Management Benefits Valuation

### A Bibliography

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## BIBLIOGRAPHY

### A Selected Bibliography of Forest Management Benefits Valuation

- Alston, Richard M. 1972. FOREST--Goals and Decisionmaking in the Forest Service. Res. Pap. INT-128. 84 pp.

(A goal-oriented decision model for National Forest management, based on a review of the legislation calls for maximizing the sum of the weighted values of six resources: Fish and wildlife (F), outdoor recreation (O), range or forage (R), environmental amenities (E), soil and watershed (S), and timber (T). Priorities established in management practice, through public involvement, and through the budget process, have been set without direct reference to an overriding goal. The model should help to direct current agency efforts to strengthen the ability to demonstrate the consequences of alternative actions.)

- Amidon, Elliot, and Gary H. Eisner. 1968. "Delineating Landscape View Areas." USDA For. Ser. Res. Note PSW-180, 5 pp. Pacific Southwest For. and Range Exp. Stn., Berkeley, Cal.

- Arthur, Louise M., and Ron S. Boster. 1976. "Measuring Scenic Beauty: A Selected Annotated Bibliography." USDA For. Serv. Gen. Tech. Rep. RM-25. 34 pp.

Of the 167 papers covered, 95 percent date from 1965. Citations are divided into four categories: literature reviews, inventory methods, public involvement, and miscellaneous. Many annotations also carry a "critical comment."

- Baker, Malchus B., Jr. 1975. "Modeling Management of Ponderosa Pine Forest Resources," pp. 478-493. In Watershed Manage. Symp., ASCE Irrig. Drain. Div. (Logan, Utah, Aug. 1975) Proc. 1975.

Manipulating forests on volcanic soils in Arizona showed that: water-yield increases of 0.6 inch are realistic; harvestable timber growth can be increased, even with reduced basal area; understory plant growth and deer and elk habitat can be improved; economic returns can be increased, even when environmental factors are emphasized.

- Barry, Robert. 1975. "Recreation Literature Access System." USDI Bureau of Land Management. Technical Note T/N 273-R3. pp. 25-34.

This technical note release is the third of the Recreation Literature Access System series. It contains a selected bibliography of the topic of visual resource management.

Beardsley, Wendell. 1970. "Economic Value of Recreation Benefits Determined by Three Methods." USDA Forest Serv. Res. Note RM-176, 4 pp.

Consumer's surplus, monopoly revenue, and visitor survey methods all yielded value-per-visitor-day figures near \$1, but total values differed considerably. The monopoly revenue method is freest of uncontrolled bias, but none of the three measures "market price" in the usual sense.

Boster, Ron S. 1973. "On the Criteria for and the Possibility of Quantifying the Aesthetic Aspects of Water Resource Projects," pp. 6-21. In Toward a Technique for Quantifying Aesthetic Quality of Water Resources. Perry J. Brown, ed. (Colloq., Park City, Utah, Oct. 1972). Inst. Water Resour., Dep. Army, Corps Eng. PRWG-120-2, Utah State Univ., Logan. 91 pp.

Boster, Ron S., and Terry C. Daniel.\* 1972. "Measuring Public Responses to Vegetative Management," pp. 38-43. In 16th Annu. Ariz. Watershed Symp. (Phoenix, Ariz., Sept. 1972) Proc. Ariz. Water Comm. Rep. 2, Phoenix, Ariz. 43 pp.

Presents a set of criteria that might be used to judge technique designed to quantify scenic beauty, describes a new approach based upon a systematic conceptual model and supported by some recent research results from Arizona timberlands, and relates the virtues of this approach in the context of the criteria. Indicates preference for more natural appearing areas although Uniform Stripcut and Conventional Log treatments were preferred over the nearly natural Relict area. Describes the Theory of Signal Detection (TSD) as it relates to the criteria mentioned in the article.

Brown, Harry E. 1971. "Evaluating Watershed Management Alternatives." Am. Soc. Civil Eng., J. Irrig. Drain. Div. 97(IR1): 93-108.

Summarizes multiple use results of watershed treatments on Beaver Creek Pilot Project through about March 1971 and briefly outlines plans for economic evaluations.

Clawson, Marion. 1976. "The Economics of National Forest Management." Johns Hopkins University Press. Resources for the Future Working Paper ENG. 117 pp.

Daniel, Terry C., and Ron S. Boster. 1976. "Measuring Landscape Aesthetics: The Scenic Beauty Estimation Method." USDA For. Serv. Res. Pap. RM-167, 66 pp. Rocky Mountain For. and Range Exp. Stn., Fort Collins, Co.

Daniel, Terry C., Lawrence Wheeler, Ron Boster, and Paul Best. 1973. "Quantitative Evaluation of Landscapes: An Application of Signal Detection Analysis to Forest Management Alternatives." Man-Environment Systems 3(5): 330-344.

Davis, Kenneth P. 1966. "Forest Management: Regulation and Valuation." McGraw-Hill. 2nd edition. 519 pp.

The central viewpoint is managerial. Part I gives methods and techniques of forest regulation for continued timber production. Part II deals with organization of a forest property as a whole. Part III gives a concise and useful treatment of valuation principles and techniques applied to forest problems. Does not measure or value intangible benefits.

Dyrland, R. D. 1974. "The Practical Linkage of Economics With Hydrologic Data and Interpretations For Use in the Resource Planning/ Decision Making Process." In: Abstracts of Papers presented at the first applied Wildland Watershed Management Workshop. Feb. 1974, pp. 29-35.

Dyrland, Richard and Robert Gordon. 1974. "Invest III: A benefit-cost program for quantitatively examining alternative resource programs." USDA Forest Service, Region 5. Revised edition. 75pp.

Freeman, A. Myrick, III, and Robert H. Haveman. 1970. "Benefit-Cost Analysis, Multiple Object," Current Issues in Water Resource Plan, Water Resource Res. Dec. 1970, 6(1533-1539).

Basic principles of multiple objectives are discussed. The need for careful, non-overlapping, empirically measurable definitions of each objective is brought out. The limits placed on multiple objective planning by the absence of a set of social weights are pointed out, and the possibility of deducing these weights from congressional actions is discussed. The regional development objective receives particular attention.

Goforth, Marcus H. and Thomas J. Mills. 1975. "A Financial Return Program For Forestry Investments." USDA Forest Service, Agriculture Handbook No. 488. 18 pp.

Gregory, G. Robinson. 1972. "Forest Resource Economics." Ronald Press Company. 598 pp.

This is a textbook in applied economics aimed at integrating forestry with the economic system of the United States. Part IV of the text provides an economic approach to products other than timber - such as recreation, water, and wildlife. An introduction to benefit/cost analysis, to welfare economics, and to public production introduces these elements into the more traditional framework of forest economics.

Lennartz, Michael R.,\* and Ardell J. Bjugstad. 1975. "Information Needs to Manage Forest and Range Habitat for Nongame Birds," pp. 328-33. In Proc. Symp. Manage. For. Range Habitats for Nongame Birds (Tucson, Ariz., May 1975). USDA For. Serv. Gen. Tech. Rep. WO-1, Wash. D.C. 343 pp.

Highlights the management information and research needs as pointed out in previous papers of this Proceedings, and comments submitted from land managers. A consensus is implied that management of nongame birds and their habitats is a relatively new resource issue, and available information is badly scattered.

Leopold, A. Starker. 1967. "Quantitative and Qualitative Values in Wildlife Management." In Natural Resources - Quality and Quantity. 217 pp. (S. Von Ciriacy-Wantrup and J. J. Parson, eds.) Berkeley and Los Angeles; Univ. of Calif. Press.

Litton, R. Burton, Jr. 1968. "Forest Landscape Description and Inventories" - a Basis for Land Planning and Design. USDA For. Serv. Pacific Southwest For. and Range Exp. Stn., Berkeley, Cal. Res. Pap. PSW-49. 64 pp.

This report summarizes conclusions about what to look for and ways of recording landscape attributes. The approach is from the discipline of design, but throughout the study it has been evident that designers must depend upon other disciplines to validate their impressions and carry out their proposals.

Major, David C. 1969. "Benefit-Cost Ratios for Projects in Multiple Objective Investment Programs." Water Resources Res. 5: 1174-1178.

Investment programming for multiple objectives rather than simply for the traditional water resource investment objective of increasing the national income has become an important new element in water resources planning in the United States. Reference is made to current multiple objective planning efforts, and the relevant theory is briefly explained. The benefit-cost ratio appropriate to projects in multiple objective programs is presented, and it is shown how this ratio differs from the ratios required by current federal instructions, which do not allow agencies to reflect accurately the interaction of social preferences and investment opportunities. A change in the federal instructions is recommended.

Myles, George A. 1972. "Economics of Elk and Cattle Grazing on National Forests." Report prepared for USDA For. Serv., Denver, Colorado, 11pp.

This report compares, on a dollar basis, animal unit months of elk grazing to animal unit months of cattle grazing on national forest land in Wyoming. It cites reasons why allocated expenditures for harvested elk and for an AUM of elk grazing are arbitrarily assigned.

provided additional food while maintaining sufficient vegetation for cover.

Pearson, Henry A., and Donald A. Jameson. 1967. Relationship between timber and cattle production on ponderosa pine range: The Wild Bill Range. USDA, For. Serv., Rocky Mt. For. and Range Exp. Stn., Fort Collins, Colo., unnumbered publ. 10 p.

Regelen, W. W., et. 21. 1974. Effect of logging on forage values for deer in Colorado. J. For. 72(s). 4 p.

Abstract--Plant species important for deer forage were collected three times in summer 1970 from clearcut and uncut strips in a lodgepole pine (*Pinus contorta*)-spruce-fir (*Picea engelmannii*-*Abies lasiocarpa*) forest 15 years after logging. Crude protein content, moisture content, and in vitro digestibility within a collection date did not differ statistically between clearcut and uncut strips. Crude protein and moisture content declined significantly between dates. But in vitro digestibility did not change as the plants matured. Because of greater species diversity and plant productivity, and because deer spent more time grazing in clearcut strips, they obtained over twice as much of their crude protein and digestible dry matter there.

Ridd, Merrill K. 1965. Area-oriented multiple use analysis. Res. Paper INT-21. 14 p.

This paper studies and analyzes both economic and intangible values of separate natural resources in the Paunsaugunt Area of Utah and relates them to the total economy. Relative to intangible benefits, this publication suggests the importance of considering values of the various resources beyond the point of harvest and it also indicates the need for considering where dollar values are generated.

Schweitzer, Dennis L., James R. Ullrich, and Robert E. Benson. 1976. Esthetic evaluation of timber harvesting in the Northern Rockies-- a progress report. USDA For. Serv. Res. Note INT-203, 11 p. (Panels of judges have been evaluating the esthetic dimension of harvested areas in the Northern Rockies. Studies conducted in Wyoming and Montana agree with intuition in that forest scenes are generally liked less as the evidence of man's activities increases.)

Describes the technique used in the studies. Rates various harvest methods and treatments based on observers preferences.

Turner, James M. 1974. Allocation of forest management practices on public lands. Ann. Reg. Sci. 8(2): 72-88.

Describes a process for integrating product yields, costs, and values into a planning framework which broadly defines management practices on National Forest lands.

- U.S. Department of Agriculture. 1975. Beaver Creek Visual Analysis. Regional Office Landscape Architect's Group, Rocky Mountain Region USDA Forest Service.

Defines the visual quality existing within the Beaver Creek area and identifies the most visually sensitive portions of the landscapes within the area, as seen from Interstate 70, U.S. 6 and 24, and from the road leading into the area. The effects of the proposed Beaver Creek Ski Area on scenic quality are also analyzed. Describes the three basic components of the visual analysis used.

- USDA Forest Service. 1971. Forest management in Wyoming - timber harvest and the environment on the Teton, Bridger, Shoshone, and Bighorn National Forest. Intermountain Region, Ogden, Utah, and Rocky Mountain Region, Denver, Co. 80 p.

The authors explored the concerns and apprehensions of individuals and organizations in Wyoming in response to forest management practices. The study was conducted in accordance with section 102 of the National Environmental Policy Act of 1969 (Public Law 91-190, January 1, 1970), and the findings were candidly reported. The authors also recommend needed changes in management practices.

- U.S. Department of Agriculture, Forest Service. 1973. National forest landscape management, volume 1. Agriculture Handbook No. 434, Superintendent of Documents, Washington, D.C. 77 p.

Outlines the principles and concepts which underlie landscape or visual resource analysis. Discusses how the character of a landscape can be described in terms of four "dominance elements" and how the relative impact of these elements is influenced by a number of perceptual and environmental factors.

- USDA Forest Service. 1974. National forest landscape management, Volume II, Chapter I (The visual management system) Agriculture Handbook 462, Superintendent of Documents, Washington, D.C. 47 p.

This publication utilized the concepts discussed in National Forest Landscape Management. Volume I, as the basis for developing a visual management system. This system identifies visual quality objectives for forest management based on criteria of scenic value and "sensitivity level." Sensitivity level is determined by the amount of use that an area receives and the importance of scenic quality to those uses.



U.S. Department of Agriculture, Forest Service. 1975. National forest landscape management, Volume II, Chapter 2 Utilities, Agriculture Handbook 478, Superintendent of Documents, Washington, D.C. 147 p.

Discusses methods by which the visual impacts of utility installations (gaslines, electric transmission lines, microwave systems, and water collection systems) can be minimized by system planning, construction procedures, and facility design. Basic technical aspects of utility design and installation are also described to provide land managers with insight into those considerations.

Wallmo, O.C. 1969. Response of deer to alternate strip clearcutting of lodgepole pine and spruce-fir timber in Colorado. USDA For. Serv. Rocky Mt. For. and Range Exp. Sta., Res. Note RM-141.

Pellet-group counts indicated that in Colorado clearcutting lodgepole pine and spruce-fir forest in strips 1, 2, 3, and 6 chains wide, with alternating uncut strips of the same widths, doubled the use by mule deer 10 years after logging. The increase in use was in the cut strips, where mean pellet-group densities were three times those on uncut strips and on adjacent virgin forest.

Wallmo, O. C., W. L. Regelin, and D. W. Reichert. 1972. Forage use by mule deer relative to logging in Colorado. J. Wilde Manage. 36(4): 1025-1033.

White, Glenn M. (in press) Social influence variations in evaluating managed and unmanaged forest areas. J. Applied Psychol.

Williamson, R. M., and W. F. Currier. 1971. Applied landscape management in plant control. J. Range Manage. 24:2-6.

Plant control results in drastic abrupt changes in the dominating landscape of a site. To lessen this impact and create a pleasing aspect, the land manager must use his ingenuity in applying techniques that will result in coordinating basic data, soils, wildlife needs, aesthetics, and range to arrive at an action plan that will maximize all resources and activities. Perhaps the most difficult land resource value to assess, maintain, and manage is natural beauty. Thus, the application of a plant control project is a challenge in landscape management application. Experience has shown that, through a joint effort by all disciplines, it is possible to apply a practical form of landscape management that results in retention and even enhancement of the natural beauty while accomplishing the basic resource objectives desired in a plant control program.